Applicant requests reconsideration of claim 1 and the rejected claims dependent thereon as being unpatentable over Li '136 in view of Kawamoto et al. '800.

The ninth clause of claim 1 has been amended to specify means for connecting the third shaft to the second end wall so that the third shaft is rotatably fixed to the first shaft and extends along said axis away from the first and second shafts such that all said shafts are collinear but separate from one another. Furthermore, as now specified in the last clause of claim 1 and as noted above, the ring gear is formed in the hub side wall.

In contrast to applicant's claimed construction, the Li reference discloses a motor having a straight-through shaft 40 which supports both sides of the motor. That shaft 40 corresponds to the first shaft in Applicant's claims. The Li motor also includes a rotor 50 mounted on a rotary shaft 90 which corresponds to the second shaft in Applicant's claims. Formed at the right-hand end of axle 90 is a sun gear 110 which meshes with planet gears 120 extending from a pulley plate 150. The right-hand end of the pulley plate 150 corresponds to the third shaft in Applicant's claims. The planet gears 120 also mesh with a ring gear 100 mounted to the side of case plate 30 which forms the housing for the rotor 50. The case cover 190, constituting the wheel hub, is fixed to rotate with the pulley plate 150.

Thus, when the Li motor is in operation, axle 40 (corresponding to Applicant's first shaft) is fixed, plate shaft 90, i.e., the second shaft, rotates at the speed of rotor 50 and the pulley plate 150, i.e., Applicant's third shaft, and the hub 190 connected thereto rotate at a slower speed. Clearly then the Li motor differs from the assembly recited in amended claim 1 in at least two respects. First, the pulley plate 150, i.e., the third shaft,

is not rotatably fixed to the axle 40, i.e., the first shaft, as required by the ninth clause of claim 1. Rather, it rotates along with the wheel hub 190. Secondly, in Li, the ring gear is not formed in the hub side wall as required by the last clause of claim 1. Rather, the ring gear is in the end plate 30 of the motor case or housing.

As discussed in detail in the paragraph bridging pages 13 and 14 of Applicant's application, Applicant specifically avoided use of a through-shaft or axle such as the axle 40 in Li. This allows the use of a very small sun gear or pinion which, in turn, allows the use of large diameter planet gears to achieve a large gear reduction in a small package. Due to the fact that Li uses a through shaft or axle 40, the sun gear 110 which encircles axle 40 must be quite large in diameter. Resultantly, his motor in order to achieve the necessary gear reduction would have to be quite large and impractical for use as a hub motor in a bicycle.

The drive device disclosed in the Kawamoto et al., patent is similarly disadvantaged.

More particularly, the motor rotor of that device rotates on a shaft 6 within a motor housing 1. The right hand end of shaft 6 is formed as a sun gear 21 which meshes with planet gears 20 rotatably mounted to the flange 9a of a rotary shaft 9. The planet gears, in turn, mesh with a ring gear 22 secured to the right side wall portion 4 of motor housing or casing 1. In other words, like in the Li motor, the ring gear is formed in the motor housing, not in the hub enclosing that housing as required by Applicant's claim 1. On the contrary, the wheel hub 14 in Kawamoto et al., is rotatably fixed to the shaft 9 way to the side of the motor housing 1.

Thus, in Kawasaki et al., the motor casing 1 itself is fixed and corresponds to Applicant's first shaft, the motor shaft 6a corresponds to Applicant's second shaft and the shaft 9 corresponds to Applicant's third shaft. As stated above, that third shaft 9 rotates; it is not rotatably fixed to casing 1 which is required by the ninth clause of claim 1. Furthermore, the hub 14 does not enclose casing 1 as specified in the tenth clause of claim 1 and the ring gear 22 in that patented device is not formed in the side wall of the hub. Rather, it is formed in the end wall of the motor housing.

Thus, the Li and Kawamoto et al., publications, whether considered singly or in any proper combination fail to teach the invention recited in Applicant's claim 1 and the claims dependent thereon.

New claims 38 to 42 are also allowable over the reference assemblage cited by the Examiner. Claim 38 is directed to the FIGS. 9 and 9A embodiment of the invention wherein only the first shaft projects from the hub, i.e., the assembly has no third shaft strictly speaking. Rather, the claim specifies a gear support, i.e., plate 242, connected to the second end wall of the motor section. The added claims distinguish the cited prior art for the same reasons discussed above in connection with claim 1. That is, the gear support is connected to, and therefore is rotatably fixed to the first shaft by way of the motor section and the ring gear is formed in the hub rather than in the motor section as in the prior art motive devices. Accordingly, the new claim should be allowed also.

Accordingly and for the foregoing reasons, this application should be allowed.

Please charge any additional fee occasioned by this paper to our Deposit Account No. 03-1237.

Respectfully submitted,

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6100615

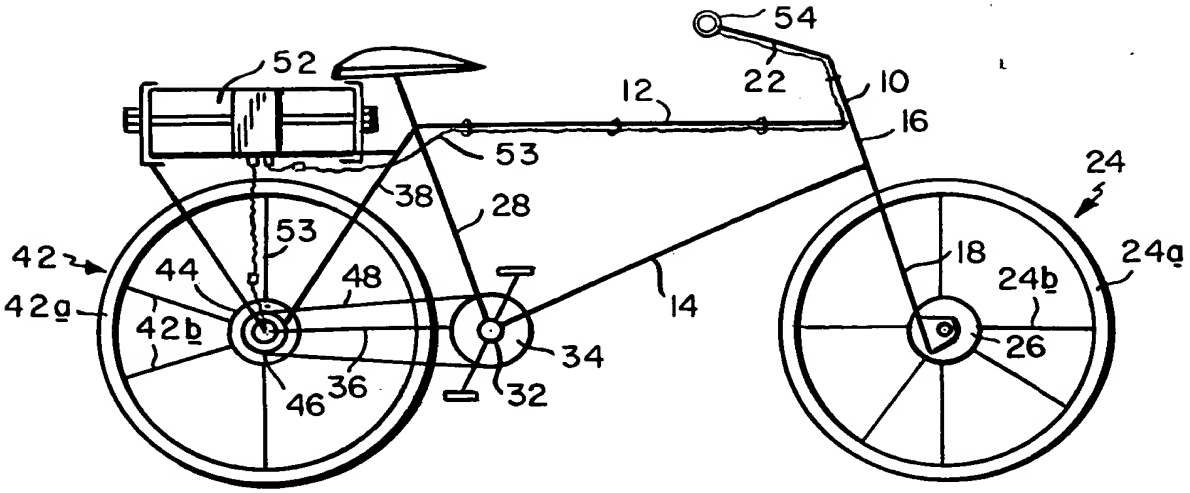


FIG. 1

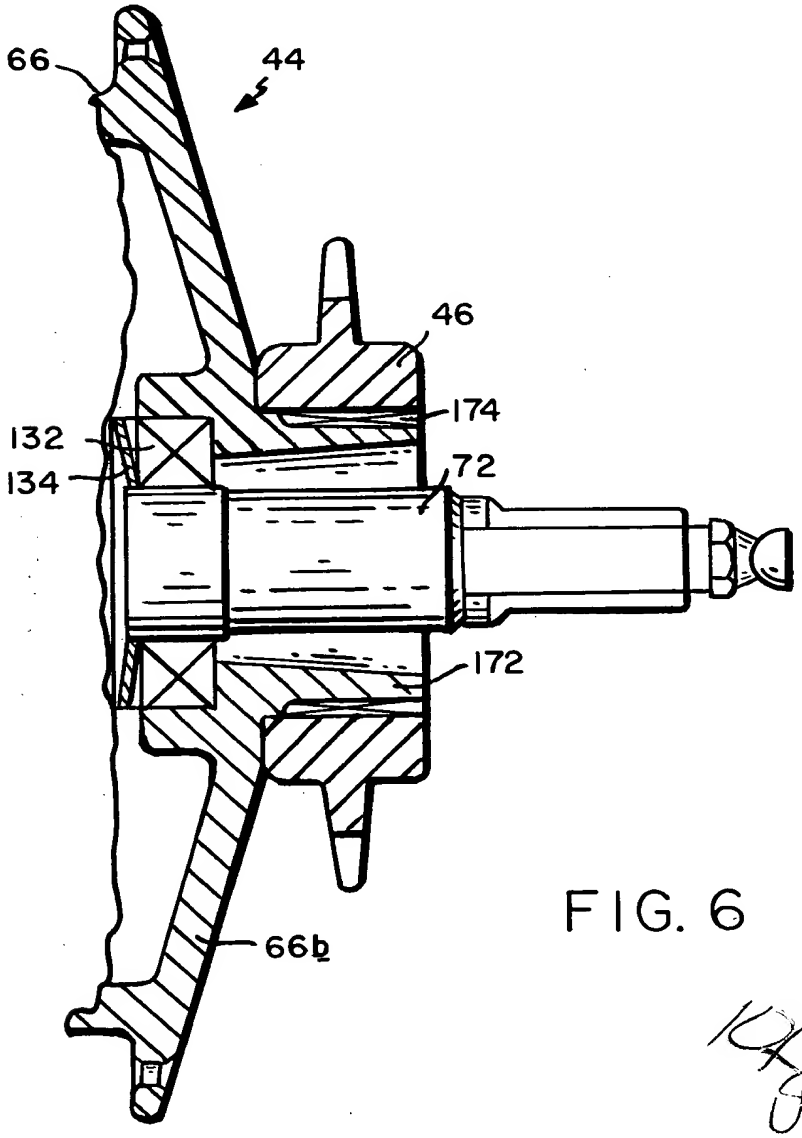
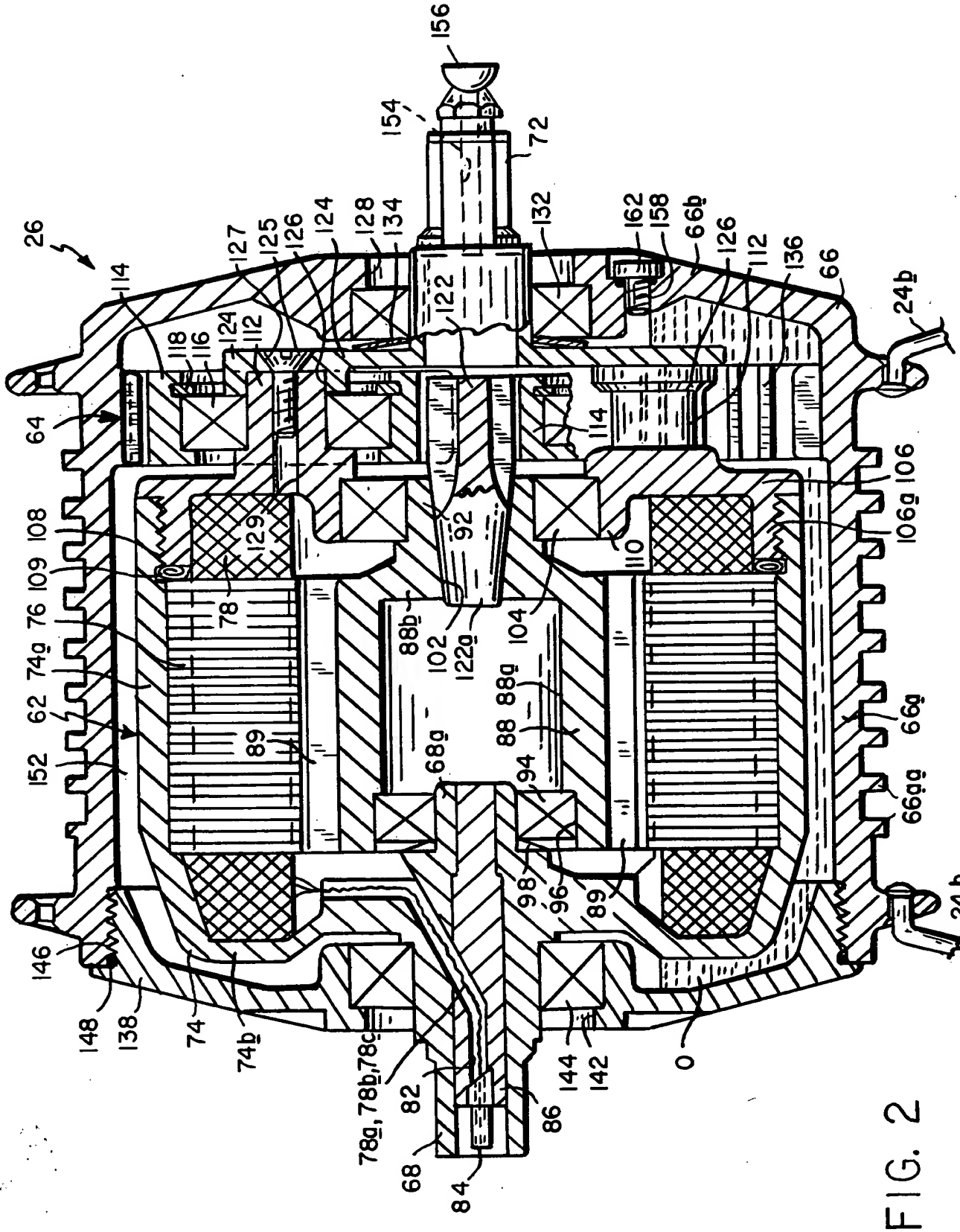


FIG. 6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122a
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62
88a
88
66a
152
89
68a
94
66aa
98
96
89
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148
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142
0
68
84

FIG. 2

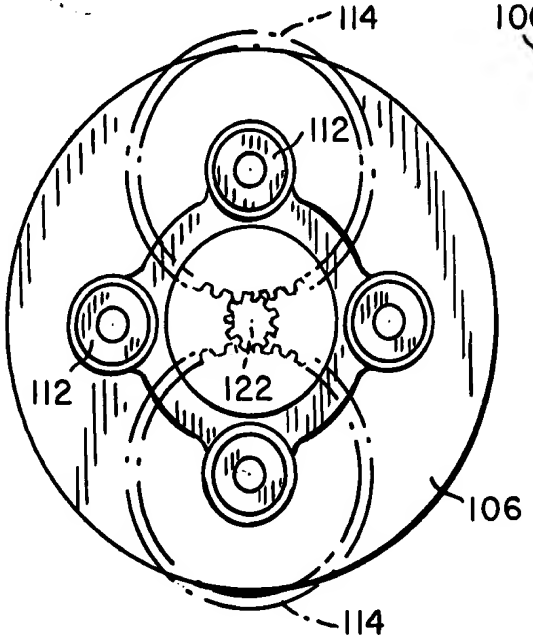


FIG.4

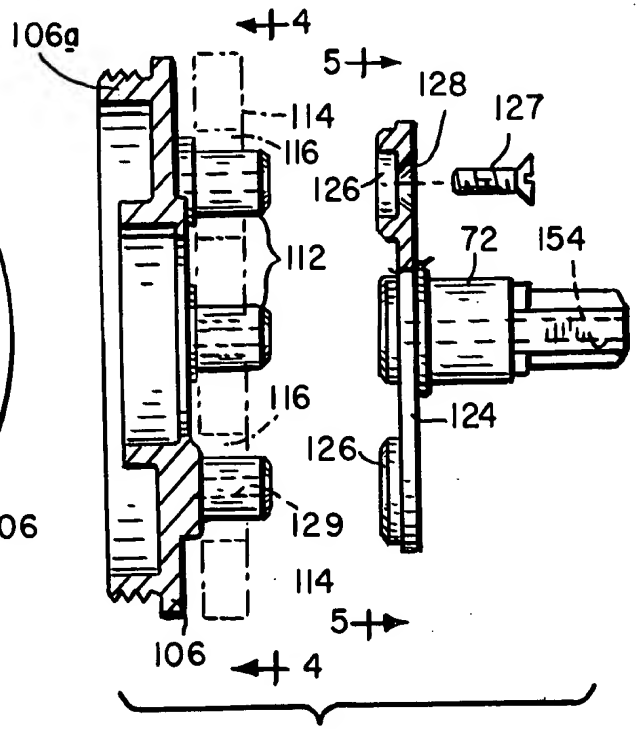


FIG.3

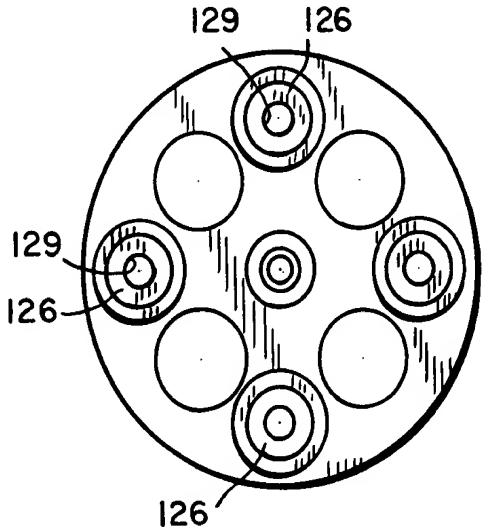
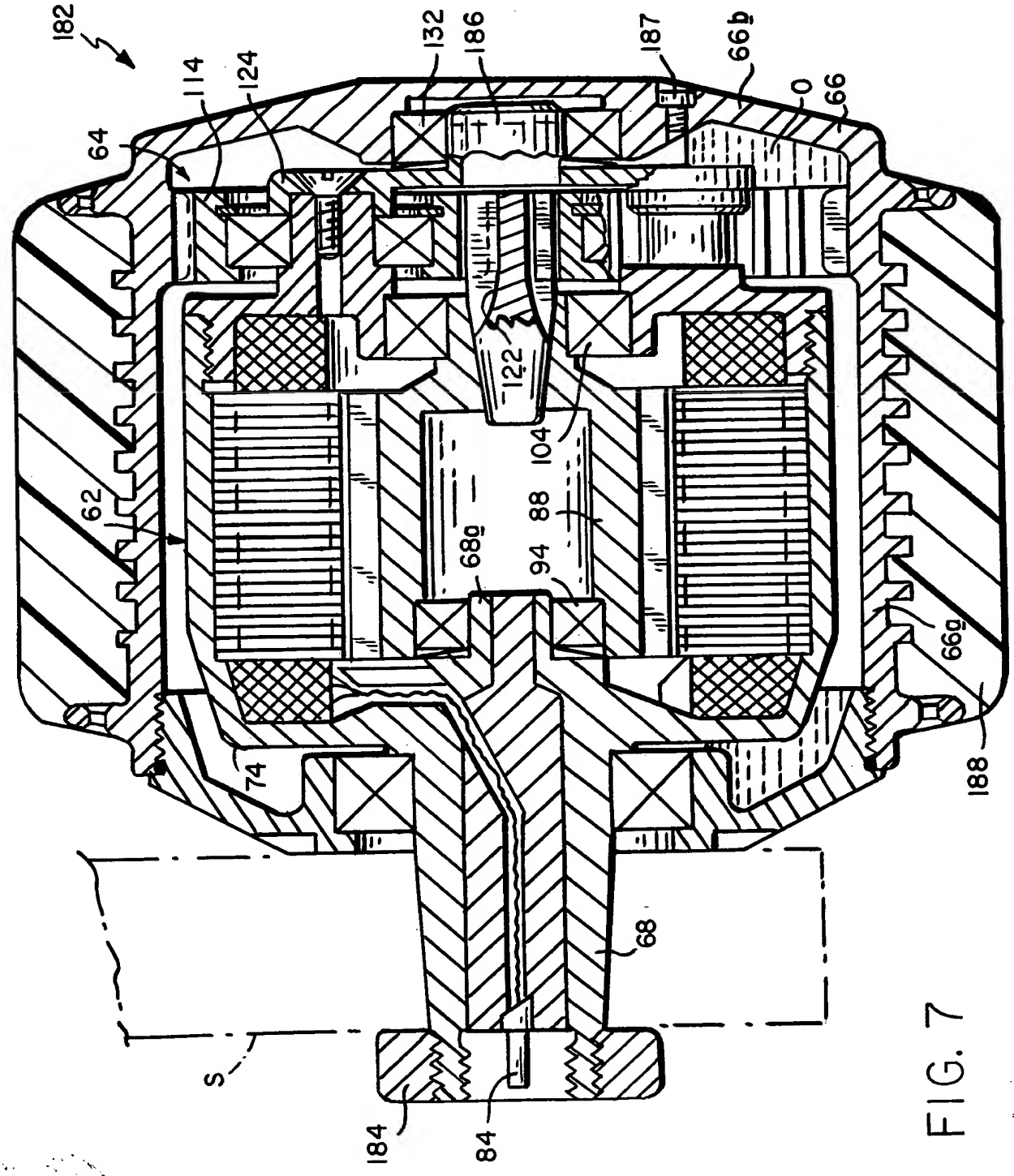


FIG. 5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188
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S
184
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FIG. 7

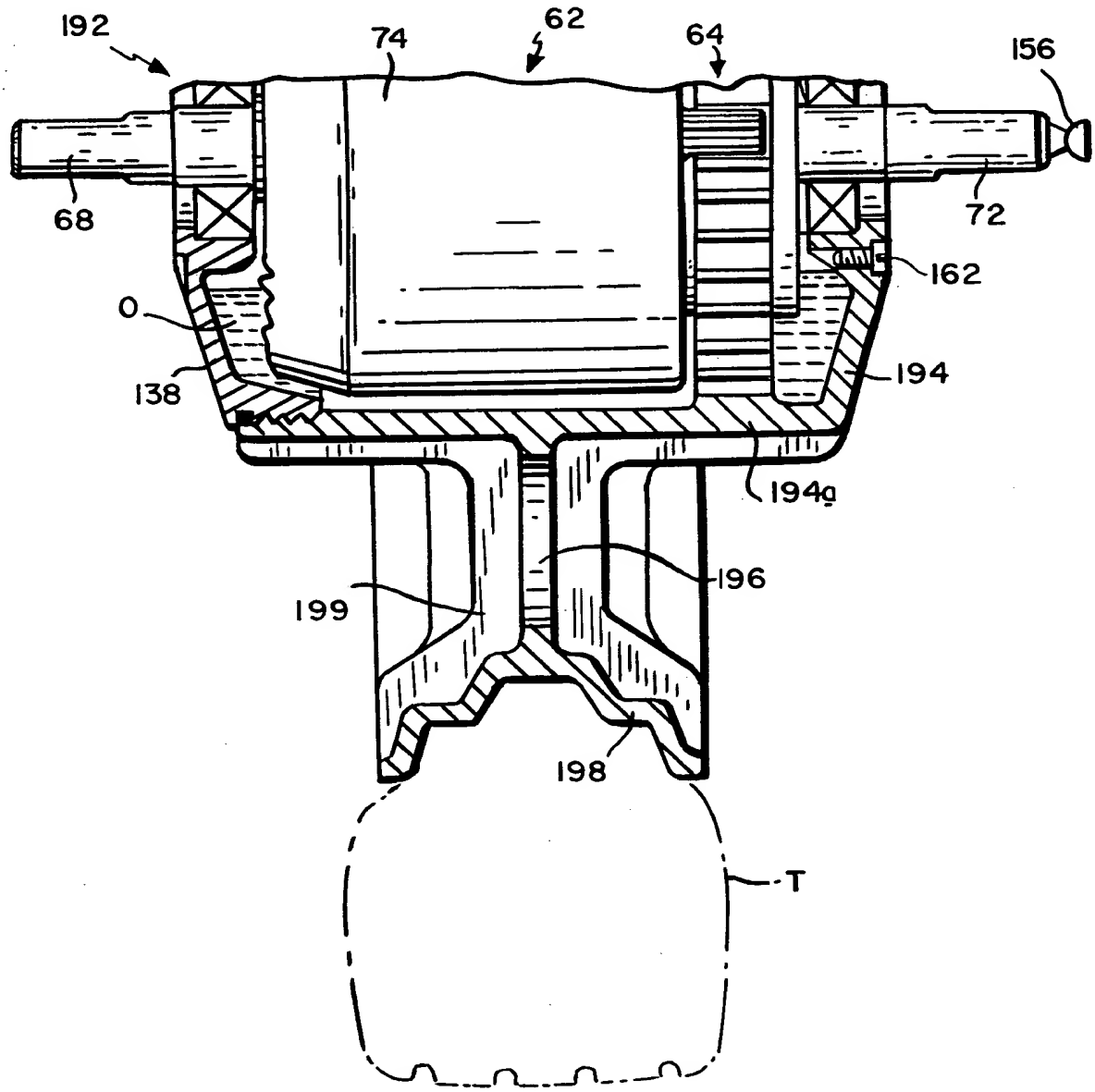
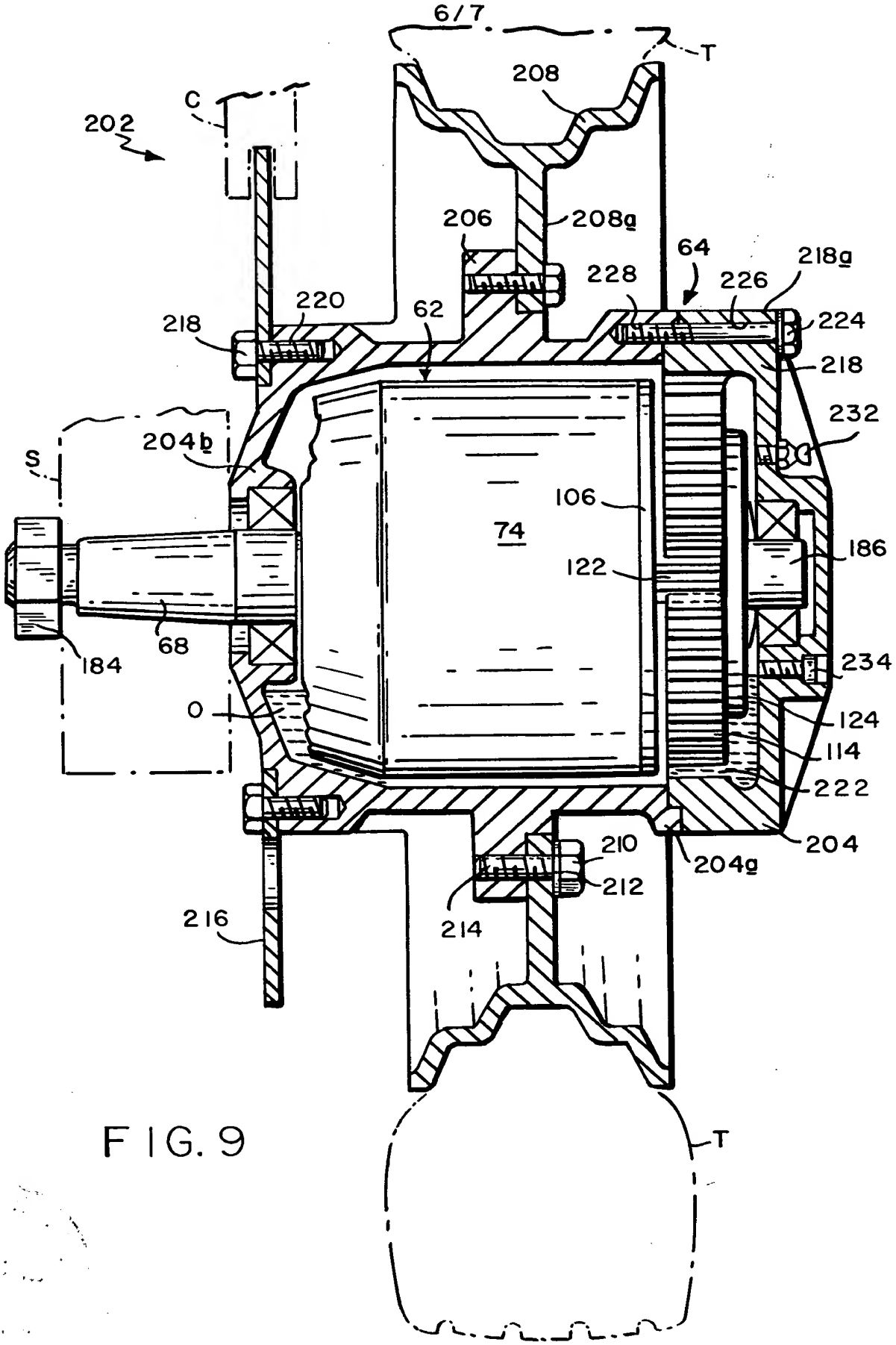


FIG. 8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204a
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214
216
T

FIG. 9

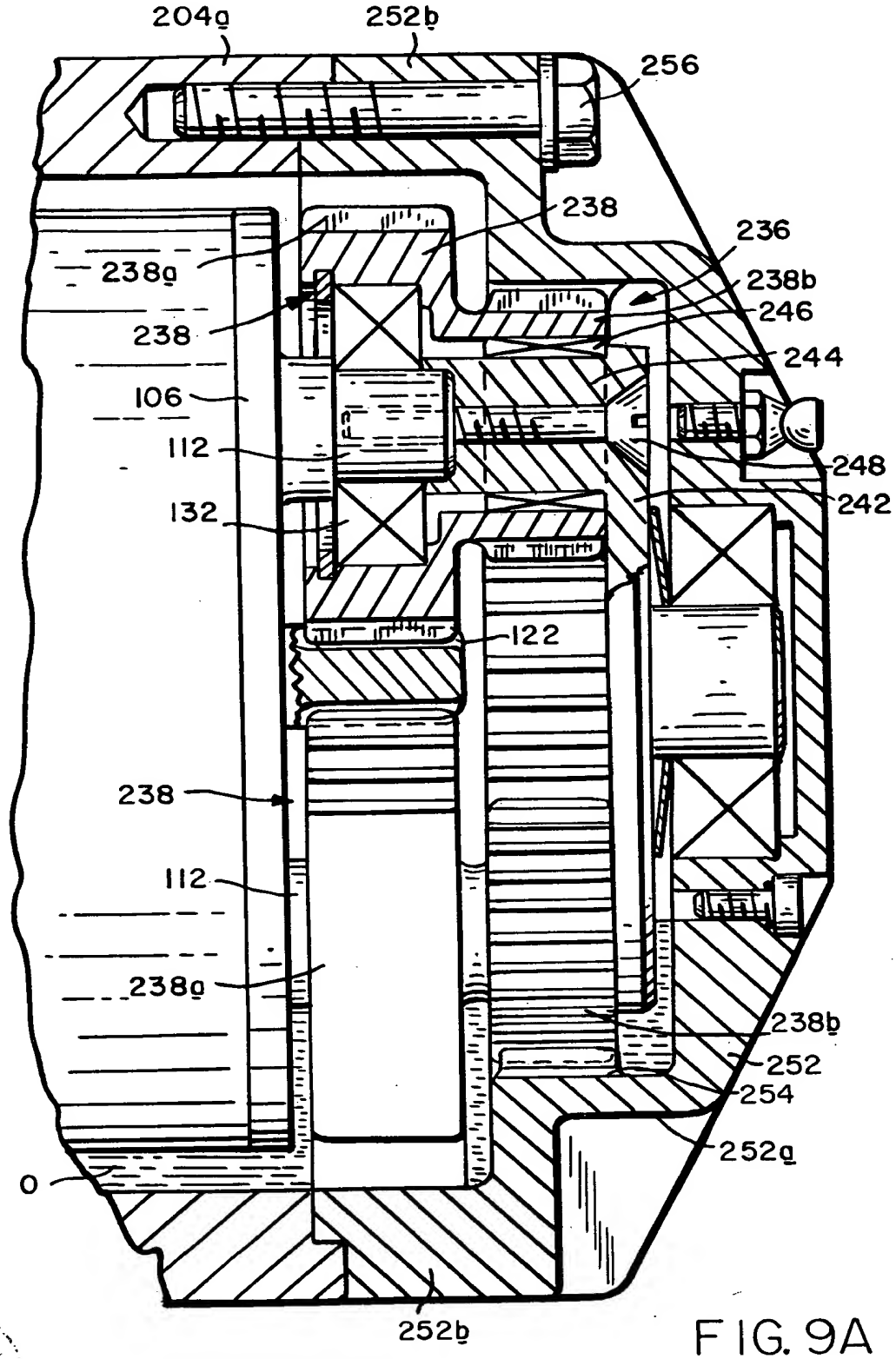

FIG. 9A